3GPP TSG-RAN WG1 Meeting #100b-e Tdoc R1-200nnn

Online, April 20th –30th, 2020

Agenda Item: 7.2.6.5

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Title: TPs associated with [100b-e-NR-eMIMO-lowPAPR-02]

Document for: Decision

# Text Proposal for TS 38.211

6.4.1.1.1.2 Sequence generation when transform precoding is enabled

If transform precoding for PUSCH is enabled, the reference-signal sequence  shall be generated according to



where $r\_{u,v}^{\left(α,δ\right)}(n)$ with $δ=1$ and $α=0$ depends on the configuration:

- if the higher-layer parameter *dmrsUplinkTransformPrecoding-r16* is configured, π/2-BPSK modulation is used for PUSCH, and the PUSCH transmission is not a msg3 transmission, and the transmission is not scheduled using DCI format 0\_0 in a common search space, $r\_{u,v}^{\left(α,δ\right)}(n)$ is given by clause 5.2.3 with $c\_{init}$ given by

$$c\_{init}=\left(2^{17}\left(N\_{symb}^{slot}n\_{s,f}^{μ}+l+1\right)\left(2N\_{ID}^{n\_{SCID}}+1\right)+2N\_{ID}^{n\_{SCID}}+n\_{SCID}\right)mod 2^{31}$$

 where $n\_{SCID}=0$ unless given by the DCI according to clause 7.3.1.1.2 in [4, TS38.212] for a transmission scheduled by DCI format 0\_1 or given by the DCI according to clause 7.3.1.1.3 in [4, TS38.212] for a transmission scheduled by DCI format 0\_2 if Antenna ports field in the DCI format 0\_2 is not 0 bit or given by the higher-layer parameter *antennaPort* for a PUSCH transmission scheduled by a type-1 configured grant; and

- $N\_{ID}^{0},N\_{ID}^{1}\in \left\{0,1,…,65535\right\}$ are given by the higher-layer parameters *pi2BPSKscramblingID0* and *pi2BPSKscramblingID1*, respectively, in the *DMRS-UplinkConfig* IE if provided and the PUSCH is scheduled by DCI format 0\_1 or by DCI format 0\_2 if Antenna ports field in the DCI format 0\_2 is not 0 bit or by a PUSCH transmission with a configured grant;

- $N\_{ID}^{0}\in \left\{0,1,…,65535\right\}$ is given by the higher-layer parameter *pi2BPSKscramblingID0* in the *DMRS-UplinkConfig* IE if provided and the PUSCH is scheduled by DCI format 0\_0 with the CRC scrambled by C-RNTI, MCS-C-RNTI, or CS-RNTI or by DCI format 0\_2 if Antenna ports field in the DCI format 0\_2 is 0 bit;

- $N\_{ID}^{n\_{SCID}}=N\_{ID}^{cell}$ otherwise;

- otherwise, $r\_{u,v}^{\left(α,δ\right)}(n)$ is given by clause 5.2.2.

🡨unchanged text omitted 🡪

# Text Proposal for TS 38.212

**7.3.1.1.3 Format 0\_2**

<Unchanged parts are omitted>

- Antenna ports – number of bits determined by the following:

- 0 bit if higher layer parameter *AntennaPorts-FieldPresence-ForDCIFormat0\_2* is notconfigured;

- 2, 3, 4, or 5 bits otherwise,

- 2 bits as defined by Tables 7.3.1.1.2-6, if transform precoder is enabled, *dmrs-Type*=1, and *maxLength*=1, unless *DMRSuplinkTransformPrecoding-r16* and *tp-pi2BPSK* are both configured and π/2 BPSK modulation is used;

-    2 bits as defined by 7.3.1.1.2-6A, if transform precoder is enabled, and *DMRSuplinkTransformPrecoding-r16* and *tp-pi2BPSK* are both configured, π/2 BPSK modulation is used, *dmrs-Type*=1, and *maxLength*=1;

-     4 bits as defined by Tables 7.3.1.1.2-7, if transform precoder is enabled, *dmrs-Type*=1, and *maxLength*=2, unless *DMRSuplinkTransformPrecoding-r16* and *tp-pi2BPSK* are both configured and π/2 BPSK modulation is used;

-     4 bits as defined by Tables 7.3.1.1.2-7A, if transform precoder is enabled, and *DMRSuplinkTransformPrecoding-r16* and *tp-pi2BPSK* are both configured, π/2 BPSK modulation is used, *dmrs-Type*=1, and *maxLength*=2;

- 3 bits as defined by Tables 7.3.1.1.2-8/9/10/11, if transform precoder is disabled, *dmrs-Type*=1, and *maxLength*=1, and the value of rank is determined according to the SRS resource indicator field if the higher layer parameter *txConfig = nonCodebook* and according to the Precoding information and number of layers field if the higher layer parameter *txConfig = codebook*;

- 4 bits as defined by Tables 7.3.1.1.2-12/13/14/15, if transform precoder is disabled, *dmrs-Type*=1, and *maxLength*=2, and the value of rank is determined according to the SRS resource indicator field if the higher layer parameter *txConfig = nonCodebook* and according to the Precoding information and number of layers field if the higher layer parameter *txConfig = codebook*;

- 4 bits as defined by Tables 7.3.1.1.2-16/17/18/19, if transform precoder is disabled, *dmrs-Type*=2, and *maxLength*=1, and the value of rank is determined according to the SRS resource indicator field if the higher layer parameter *txConfig = nonCodebook* and according to the Precoding information and number of layers field if the higher layer parameter *txConfig = codebook*;

- 5 bits as defined by Tables 7.3.1.1.2-20/21/22/23, if transform precoder is disabled, *dmrs-Type*=2, and *maxLength*=2, and the value of rank is determined according to the SRS resource indicator field if the higher layer parameter *txConfig = nonCodebook* and according to the Precoding information and number of layers field if the higher layer parameter *txConfig = codebook*.

where the number of CDM groups without data of values 1, 2, and 3 in Tables 7.3.1.1.2-6 to 7.3.1.1.2-23 refers to CDM groups {0}, {0,1}, and {0, 1,2} respectively.